

anguste expansum et reflexum, margine columellari ad insertionem dilatato; umbilicus plus minus infundibuliformis.
Diam. maj. 16 millim., min. 13; alt. 9.

Hab. Sumba.

This species might be regarded as a variety of *C. transversalis*, Mousson. It differs in being much more distantly punctate, in the smaller aperture, in the contraction of the last whorl behind the peristome, and the somewhat greater angularity of the edge of the umbilicus.

Planispira alboventata.

Testa depressa, subglobosa, anguste umbilicata, fusca, lineis incrementi obliquis arcuatis et granulis remotis in seriebus quincuncialibus dispositis instructa; spira brevis, convexa, obtusa; anfr. 4, convexiusculi, ultimus antice breviter descendens, pone labrum paulo constrictus; apertura valde obliqua, intus pallide roseo-purpurea; perist. expansum, et leviter reflexum, purpureo-lilaceum, in medio marginis dextri albo subtuberculatum, margine columellari pallido, dente albo intus instructo, late reflexo.
Diam. maj. 24 millim., min. 19; alt. 16.

Hab. South Flores, at 3600 feet.

The distant granules upon the surface, especially upon the body-whorl, the distinct columellar tooth, and the slight nodule upon the outer lip are the principal features of this species.

LVIII.—*Descriptions of some new Species of Scorpions.*
By R. I. POCOCK.

Genus OPISTHOPHTHALMUS, C. Koch.

Opisthophthalmus ecristatus, sp. n.

♂.—Closely allied both to *O. Wahlbergi* and *C. opinatus*, with the vesicle granular and the ocular tubercle in the middle of the carapace.

Tarsi of third and fourth legs with a single row of 3 inferior spines in addition to those on the lobes; protarsus of first and second leg armed externally with 4 strong spines. Triangular area on carapace visible; interocular area granular in its anterior half, the smooth portion reduced to a patch on each side midway between the median eyes and the anterior border. Last abdominal sternite and lower side of first caudal segment with four strong smooth keels.

Tail short, barely three times the length of carapace; the third segment about as wide as long.

Hand not keeled, broad, completely covered above with fine close-set granules.

Mandibles with three stridulating-bristles on the inner surface of its basal segment.

Pectines with 25 teeth running right up to the base of the edge of the shaft.

Measurements in millimetres.—Total length 75; length of carapace 11, of tail 33.

Loc. Transvaal. Specimen procured from Mr. O. E. Janson.

Most nearly allied to *O. opinatus* as diagnosed by Kraepelin, but apparently differing in the granulation of the "Spiegel" of the carapace, the carination of the last abdominal sternite and of the first caudal segment below, structure of hand, spine-armature of posterior tarsi, &c.

Genus OPISTHACANTHUS, Pet.

Opisthacanthus fulvipes, sp. n.

Colour a tolerably uniform reddish brown, redder on the chelæ, the crests of which, as well as the fingers, are nearly black; legs and vesicle clear yellowish red.

Differs from the species common in the province of Natal, which I believe to be identical with *O. validus* of Thorell, in having the brachium and hands flatter and much less coarsely sculptured, the reticulation being finer and more evidently punctured; the superior prominence on the anterior surface of the brachium is also noticeably larger; the vesicle of the tail is distinctly higher and the granulation much coarser, its height being just about equal to the length of the carinate portion of the lower surface of the first segment and exceeding the width of the latter (in *validus* it is much less). The pectines are much longer as compared with their basal width than in *validus*. The tarsus of the fourth leg is armed below with 4 spines behind, 3 in front, one of the spines being upon the inferior distal angle (in the Natal form, *validus*, the lower side of the fourth tarsus is armed with 3 spines behind and 2 in front, with a bristle on the inferior distal angle).

In the spine-armature of its feet and the colour of its legs this species resembles the large Transvaal species which I described as *levipes*, but which Kraepelin, wrongly I think, identified with *asper*, Pet.*. *O. fulvipes* may be recognized,

* I suspect my Nyasa species *rugiceps* is in reality the same as *asper*, Pet.

however, by having the external surface of the femora of the anal legs granular, only six or seven pectinal teeth, and the high vesicle.

Measurements in millimetres.—Total length 71; length of carapace 11, of tail 33; height of the vesicle 3·3; width of first caudal segment 2·5; length of hand-back 9, of movable digit 10; width of hand 7·8.

Loc. Basutoland (*R. C. Wroughton*).

Under *O. validus* I formerly (Ann. & Mag. Nat. Hist. (6) xiii. p. 318) included more than one species. *O. asiaticus*, Keys., for example, which occurs at Port Elizabeth, is distinct from the Natal species which I now think is *validus*, Thorell; *O. capensis*, Thor., is also probably distinct, though unknown to me.

Genus CHELOCTONUS, Poc.

Cheloctonus anthracinus, sp. n.

Allied to *C. crassimanus*, Poc., but black all over, except the vesicle, which is ferruginous. The upperside of the brachium and hand much more coarsely sculptured, ornamented with thick smooth ridges and scarcely visibly punctured. In *crassimanus* the integument of the hand and brachium is densely punctured, the sculpturing forms a much closer and finer reticulation of ridges, and the inner portion of the upper surface of the hand is distinctly granular.

Measurements in millimetres.—Total length 54; length of carapace 7·2, of tail 26, of hand-back 5·5, of movable digit 7·2; width of hand 7.

Loc. Griqualand West (*J. ff. Darling*).

Genus HEMISCORPIUS, Pet.*

Hemiscorpius arabicus, sp. n.

Hemiscorpius lepturus, Pet., Pocock, Journ. Linn. Soc., Zool. xxv. (1896) p. 316 (not *lepturus*, Pet.).

Colour. Dull olive-yellow on the trunk; vesicle clear yellow; legs testaceous; chelæ reddish yellow; digits black, with pale tips.

Carapace longer than the first and second and than the

* Mon. Ak. Wiss. Berlin, April 1861, p. 426. Peters subsequently cited this genus as *Hemiscorpion* (*op. cit.* p. 511, May 1861). He described it originally, however, as *Hemiscorpius*, although in the editorial introduction to his paper, for which the editor and not Peters must be held responsible, it appears as *Hemiscorpion*. It is curious that Kraepelin, in his 'Revision,' does not cite the original reference to the genus nor Peters's admirable figure of the species.

fifth caudal segment, punctured, weakly granular in the hollows of the upper surface and at the sides; terga also punctured.

Tail about four times as long as the carapace; second segment a little longer than wide, fifth a little more than twice as long as wide; superior and supero-lateral keels strong and granular, the three inferior keels strong and granular on the third, fourth, and fifth, weakly granular on the first and second segments; the median keel obsolete on the anterior half of the first segment; vesicle wider than the fifth segment, smooth, punctured; aculeus long and normally spiniform in its distal half.

Chelæ punctured; humerus with normal granular keels above and in front; the upper and lower anterior crests on brachium granular; hand flat above, with weak median keel, strong but smooth external finger-keel; external keel of hand-back strong and granular; movable finger longer than carapace.

Genital operculum cordate, sulcate in front.

Pectinal teeth 10.

♂.—Not very different from female, but rougher, with close punctuation on the tergites and carapace; tail longer, the carapace a little shorter than its first and second segments; hand a little wider, its width about equal to the length of the hand-back; inner edge of the hand granular.

Genital operculum transversely oval, divided.

Pectinal teeth 13.

Measurements in millimetres.—♀. Total length 35; carapace 4·8, tail 18, movable digit 5.

♂. Total length 32; carapace 4·5, tail 19.

Loc. Aden (E. W. Oates and Col. Yerbury).

I formerly regarded the specimens here described as immature examples of *H. lepturus* known from Bagdad. No doubt, however, they are adult. The species may be recognized at once from *lepturus* by having the aculeus normally spiniform, and not short and subconical as described by Kraepelin (JB. Hamb. xi. p. 111, 1894). The male of *lepturus*, moreover, has the vesicle peculiarly modified and elongate.

Genus URODACUS, Pet.

Urodacus macrurus, sp. n.

♂.—*Colour.* Carapace deep ferruginous, tergites darker; legs, chelæ, and tail paler yellowish red; fingers dark.

Carapace as long as the first and one quarter of the second

caudal segment, as long as the fourth; median excision deep; frontal lobes quadrate; interocular area smooth and polished; sides granular.

Terga closely granular; sterna smooth.

Tail very long, a little more than six times as long as the carapace; first segment almost or quite twice as long as wide, fifth nearly five times as long as wide; the superior keels of the first, second, and third segments gradually elevated behind and ending in a small spiniform tooth.

Vesicle large, its width equal to that of the third segment, its height equal to its width.

Chelæ: humerus granular above; brachium smooth above and behind, a few large scattered punctures behind; a row of 8-9 pores below; hand normally but not so strongly keeled as in *U. armatus*, Poc., and *U. novæ-hollandiæ**, quite smooth above externally and below; very weakly granular internally; about 12 pores along the underside of the keel.

Legs with femora weakly granular, patella smooth; pro-tarsi of first and second with 5 external spines.

Pectinal teeth 17-18.

Measurements in millimetres.—Total length 94; length of carapace 10, of tail 62, of its fifth segment 15.

Loc. Muldiva in North Queensland, ♂ (*Dr. Broom*).

Differs from all the known species of the genus in the great length of the tail in the male. The nearest to it in this respect is *U. hoplurus* †, Poc., from the East Murchison Gold Field, West Australia, in which the tail is about five times as long as the carapace. The two species also resemble each other in the large size of the vesicle; but in other characters they are very distinct. According to the table of the species of the genus that I published in the paper cited below, the species ranges itself under heading *b*' alongside of *U. novæ-hollandiæ*, but, apart from the great length of the tail, may be recognized by the posteriorly spiniform dorsal crests of this organ, the large vesicle, &c.

This species is further of great interest inasmuch as it is the first representative of the genus *Urodacus* that has been

* I learn from Prof. Kraepelin (*in litt.*) that the specimens from Perth in the British Museum which I formerly identified as *U. novæ-hollandiæ*, Pet., and which were, I believe, so named by Peters himself, are not specifically identical with the specimens in the Berlin Museum described under that name by this author. Probably *manicatus*, Thor., is their correct title, but, pending the publication of Prof. Kraepelin's latest conclusions on this point, I retain for them the term I have hitherto assigned to them.

† Ann. & Mag. Nat. Hist. (7) ii. p. 64 (1898). This paper contains diagnoses of all the species of the genus known to me at that time.

obtained in Queensland. Dr. Broom, who collected this scorpion himself, also procured a specimen of what is perhaps the female of the same species at Hill Grove, New South Wales.

Genus *CHÆRILUS*, Simon.

Chærilus agilis, sp. n.

♀.—*Colour* dark reddish brown, not distinctly variegated; vesicle, legs, and lower surface paler; hands ferruginous, with black keels and black digits.

Carapace with its anterior interocular area almost smooth, weakly granular in front; the rest granular, longer than the first and second and as long as the fifth caudal segment.

Terga closely granular, with a pair of posterior tubercles; the fourth with a pair of granular crests on each side.

Sterna smooth; third with a polished median posterior triangular area; fifth with a short series of granules on each side.

Tail about four times as long as carapace, slender; first segment a little wider than long, second a little longer than wide, fourth nearly twice as long as wide, fifth more than three times as long as wide: inferior keels of the first segment obsolete; of the second represented by a few granules; a little more granular on the third; the rest of the keels strong and coarsely granular; the median lateral represented by a few posterior granules on the second, third, and fourth, extending over two thirds of the lateral surface of the fifth segment; upper edges of the fifth rounded, granular, but not carinate, inferior crest of the segment posteriorly bifid; vesicle smooth, sparsely punctured, a long oval in shape, not flattened below, as wide as the second caudal segment; intercarinal spaces of tail smooth, except the superior, which are weakly granular.

Chelæ long and slender; humerus weakly granular above and below; the crests granular; the upper and lower crests bounding the anterior surface converging and fusing into a single crest in the distal half of the anterior surface; brachium longer than carapace, smooth, its posterior crests smooth; superior and inferior anterior crests granular, the latter uniting distally with a strong granular crest on the lower half of the anterior surface: hand long and narrow, the hand-back almost twice as long as the width of the hand and slightly longer than the carapace; in addition to the two keels which border the hand-back there are four strong keels, and two weak keels, one on the outer surface of the hand and the other on the inner surface; the hand-back keels granular

proximally, the keel along the inner edge of the upper surface coarsely granular throughout, the rest of the keels mostly smooth, though more or less granular proximally; intercarinal spaces also almost smooth; fingers long and slender, the movable considerably exceeding the hand-back and more than twice the width of the hand, furnished with 8 rows of teeth, and on the inner side of these some scattered larger teeth.

Legs almost smooth externally; femora weakly granular, very long, patella of fourth as long as carapace.

Pectinal teeth 4.

Measurements in millimetres.—Total length 56; length of carapace 7.5, tail 30, hand-back 8, movable digit 9.2; width of hand 4.2.

Loc. The Caves, Selangor in Malacca (*H. N. Ridley*).

Easily recognizable by its long and slender chelæ and legs. It is the only species of the genus known to me in which the patella of the fourth leg is as long as the carapace.

Chærilus lævimanus, sp. n.

Colour a tolerably uniform reddish black, not noticeably variegated; hands paler than trunk; variegation of legs indistinct, but more obvious than on the trunk.

Trunk moderately coarsely granular, interocular area coarsely granular in front, more finely so behind; *tubercle* more spherical than is usually the case, its anterior portion not prolonged: *terga* with lateral granular crests; lateral crests scarcely traceable on the fifth.

Sterna entirely smooth.

Tail nearly four times as long as the carapace, which slightly exceeds the length of its first and second segments; upper surface of segments almost smooth; the superior and supero-lateral crests weakly granular: lower surface of first segment finely shagreened, not crested; of second also finely shagreened, with scarcely traceable keels; of third with keels still quite feeble, but weakly granular; of fourth with granular keels; lateral surface of segments finely granular, the inferior lateral crests distinct and weakly granular on all the segments except the first: *vesicle* smooth, not globular, elongate, its width a little excelling its height and equalling width of fourth segment.

Chelæ: humerus granular above and in front, its superior and anterior keels also granular, smooth elsewhere; brachium almost entirely smooth, its upper crest with only a few granules, also a few on the lower edge of the anterior surface;

hand of medium width, its width less than length of hand-back and of movable digit, furnished with only *five* crests, the middle of the three crests which normally run from the immovable digit, as well as the median crest on the outer half of the upper surface of the hand, obsolete; the two internal (anterior) crests of the upper surface very weakly granular, the external crest of the upper surface quite smooth; the inner surface of the hand with a few granules near the base of the fingers; for the rest the spaces between the keels are quite smooth; movable digit longer than the hand-back and just about equal to the length of the carapace, with about eight rows of teeth.

Pectinal teeth 4.

Measurements in millimetres.—Total length 41; length of carapace 6, of tail 22; width of hand 4.2; length of hand-back 5, of movable digit 6.

Loc. Pulo Gaya, British North Borneo (*S. S. Flower*).

Most nearly related apparently to *C. celebensis*, Pocock (Max Weber's *Zool. Ergebnisse* etc. ii. p. 93, 1893), from Celebes; but certainly differing in the following particulars:—In *celebensis* the ocular tubercle is prolonged anteriorly; the upperside of the tail between the crests is granular; the normal keels on the hand are more strongly pronounced and more granular; the base of the immovable digit and the adjacent area of the hand is strongly granular.

Chærilus rectimanus, sp. n.

♀.—In size and colour much resembling *C. celebensis*, but easily recognizable by the form of the hand. In *celebensis* the hand is shorter, the inner edge is distinctly granular and convexly rounded, and the median keel on the upper surface is obsolete, while the remaining two keels are strong, the area between them being nearly flat; the movable digit is about as long as the hand-back. In *rectimanus*, on the contrary, the hand is longer, its inner edge is very weakly granular, straight, and parallel with the outer edge; the median crest on the upper surface is as strong as the others, although all are weak; the movable digit is shorter than the length of the hand-back, which far exceeds the width of the hand. The caudal crests in *rectimanus* are also stronger and more strongly granular than in *celebensis*.

♂.—With much longer chelæ than the female; width of the hand about half the length of the hand-back, length of hand-back exceeding that of carapace; brachium also longer than carapace. In the female the brachium is shorter than the carapace.

Measurements in millimetres.—♀. Total length 24; length of carapace 3·2, of tail 12; length of brachium 3, of hand-back 3·5, of movable digit 3; width of hand 2·2.

♂. Total length 20; length of carapace 3·2, of tail 11·5; length of brachium 3·5, of hand-back 3·5, of movable digit 3; width of hand 2.

Loc. Singapore (*H. N. Ridley*).

Cherilus variegatus, Simon, subsp. *nigricolor*, nov.

At once recognizable from the typical *variegatus* by having the dorsal surface, tail, legs, and palpi of a uniform dull black, the sterna and coxal areas dull brown and not mottled and variegated with yellow. The granulation of the dorsal surface and tail is also less close, and the lower surface of the first and second and often of the third caudal segments is smooth, the keels being obsolete, at least on the first and second. In *variegatus* the second and third segments are granular and granularly carinate below.

Measurements in millimetres.—♀. Total length 45; length of carapace 5·8, of tail 21·5, of hand-back 4·2, of movable digit 5·5; width of hand 5.

♂. Total length 43; length of carapace 5·6, of tail 24, of hand-back 5·5, of movable digit 5·5; width of hand 6·5.

Loc. Protjat in Eastern Java (*type*) and Kogok in Western Java.

Several specimens of both sexes presented to the British Museum by Prof. W. Kulczynski. We have representatives of the typical form from Tjibodas, Buitenzorg, and the Gede Volcano.

Genus PARABUTHUS, Poc.

Parabuthus flavidus, sp. n.

Allied to *P. capensis*, Hempr. & Ehrenb. (= *planicauda*, Poc.), but differing in having the ocular tubercle larger, and the tail thinner and lower, with the four inferior keels on the second and third segments much more strongly elevated posteriorly, the upper surface of the first mesially and normally longitudinally excavated, and the lateral and inferior intercarinal spaces of the tail sparsely and weakly granular; in *planicauda* the sides and lower surface of the tail are closely and coarsely granular, and the upper surface of the first is not excavated. It also differs from *raudus* of Simon at least in having the inferior keels of the first caudal segment granular.

Measurements in millimetres.—Total length 48; length of carapace 5, of tail 27.

Loc. Tangs, in Bechuanaland.

A single female sent to the British Museum by Mr. H. A. Spencer.

BIBLIOGRAPHICAL NOTICE.

The Resources of the Sea; as shown in Scientific Experiments to test the effects of Trawling and of the closure of certain Areas off the Scottish Shores. By W. C. M'INTOSH, M.D., LL.D., F.R.S., &c., Professor of Natural History in the University of St. Andrews, Director of the Museum and of the Gatty Marine Laboratory. 8vo, London, 1899. Pp. xvi, 248. Frontispiece, 16 plates, and 8 woodcuts; with Appendix of 32 Statistical Tables.

IN this volume Professor M'Intosh has accomplished a laborious but certainly invidious task. Critically examining a complicated mass of statistics published by the Fishery Board for Scotland in their Annual Reports, mainly pertaining to the influence of beam-trawling, he descants on the material in a broad light. The subject at issue resolves itself into somewhat as follows:—Has the twelve-years abolition of trawling in extensive fishing-grounds in Scotland been as productive of benefit to the fisheries as was anticipated when the bye-law was enforced, April 1886? If not, wherefore continue it? To the first query Prof. M'Intosh gives a distinctly negative reply. To the second, in substance, he strenuously submits that abolition of the restriction to trawling may safely be adopted.

The Fishery Board officially recognizes * that closure of the Firth of Forth, St. Andrews Bay, and Aberdeen Bay have proved failures in so far as respects increase of fishes in those areas. Notwithstanding, there has been no relaxation of their bye-laws affecting the said inshore waters, though this course might be deemed in consonance with their own conclusions. Furthermore, they shift the basis of their previous argument of the trawlers' destruction of brood inshore to action on presumed but hitherto imperfectly known spawning-grounds offshore in the Moray Firth (and Firth of Clyde). These more recent investigations comprise several areas beyond the three-mile limit, *e. g.* Smith Bank &c.

Meantime a considerable section of the fishing community and those commercially interested naturally feel aggrieved †, and it appears as if trawlers and liners are equally dissatisfied with the

* See 14th Ann. Rep. of the Fishery Board for Scotland for 1895 (1896): Conclusions, p. 12.

† Witness the discussion and resolution *re* "Fishing in the Moray Firth," Proceedings National Sea-Fisheries Protection Association, Conference 1898.